

Appendix C13

Economic Benefits Assessment

**FINAL REPORT
ECONOMIC BENEFITS ASSESSMENT
WOLFE ISLAND WIND PROJECT**

Submitted to:

**Canadian Renewable Energy Corporation
a wholly-owned subsidiary of
Canadian Hydro Developers, Inc.**

By:

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EXECUTIVE SUMMARY

Canadian Hydro Developers, Inc. (Canadian Hydro), through its wholly owned subsidiary Canadian Renewable Energy Corporation, is proposing to build, own, and operate a 197.8 megawatt (MW) wind plant on Wolfe Island, Township of Frontenac Islands, Ontario. The Wolfe Island Wind Project (the Project) has been awarded a Renewable Energy Supply II Contract from the Ontario Power Authority.

The Project will consist of 86, 2.3 MW wind turbines and is expected to generate an estimated 537,000 megawatt-hours per year of renewable energy. Subject to regulatory approvals, construction of the wind plant is expected to commence in the summer of 2007.

The Project will create opportunities for local area workers and contractors to provide construction and operations services. As detailed in this assessment, construction of the Project is expected to provide \$64 million in income and 252 person-years¹ of employment in the local area. Annual project operational expenditure includes an estimated \$1.2 million on income to workers and businesses in the local area. Direct operational employment attributed to the local area is estimated at 16 person-years. These operating impacts will accrue annually to the local area for the life of the Project.

Once complete, the plant will generate about \$1.9 million annual financial benefits for participating land-owners and the Township of Frontenac Islands through lease payments, taxes, and payments under the Township Amenities Agreement (Table E-1).

Table E-1 Summary of Annual Financial Benefits

Source of Income / Revenue	Dollars
Landowner Royalties ¹	\$1,161,000
Property Taxes	\$111,000
Township Amenity Fee ²	\$645,000
Total	\$1,917,000

Notes:

1. Assuming that most landowners will elect the variable payment option and that the actual electricity production per turbine is in line with target capacity factor.
2. Assuming minimum amenity fee per turbine of \$7,500 annually.

¹ For the purposes of this study person-years is defined as 2000 hours of work per year for construction and operations labour and 1760 hours for engineering work.

For all recipients, the income or revenue from royalties, taxes and amenity fees is essentially net new income or revenue. The Project has a small footprint and thus a small impact on agricultural production or the agricultural assessment base and does not generate notable demand for municipal or education services.

The economic stimulus of the Project will yield further indirect and induced impacts. Taken together, these indirect and induced impacts are referred to as the multiplier effect. The Project is likely to create between 50 and 120 indirect and induced jobs.

Finally, the Project is expected to generate additional economic benefits, such as: more reliable energy delivery, strengthening of Ontario's renewable energy cluster, and benefits associated with having a growing company such as Canadian Hydro as a local corporate citizen.

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1. INTRODUCTION

1.1 BACKGROUND

Canadian Hydro Developers, Inc. (Canadian Hydro), through its wholly owned subsidiary Canadian Renewable Energy Corporation (CREC), is proposing to build, own, and operate a 197.8 megawatt (MW) wind plant on Wolfe Island, Township of Frontenac Islands, Ontario. The Wolfe Island Wind Project (the Project) has been awarded a Renewable Energy Supply II Contract from the Ontario Power Authority.

The Project will consist of 86, 2.3 MW wind turbines and is expected to generate an estimated 537,000 megawatt-hours (MWh) per year of renewable energy. Subject to regulatory approvals, construction of the wind turbine plant is expected to commence in the summer of 2007.

Canadian Hydro is an independent developer of EcoLogo® certified renewable energy plants. The EcoLogo® certification indicates that a project meets stringent environmental criteria and contributes to the Government of Canada's goals of cleaner air and reduced emissions of greenhouse gases. Canadian Hydro owns and operates eighteen renewable energy facilities across Canada and is in the process of developing others in Ontario, Alberta, and British Columbia.

1.2 STUDY OBJECTIVE

The purpose of this assessment is to describe and quantify, where possible, the economic benefits of the Project. The study will serve as an input into the socio-economic section of the Project's Environmental Review Report (ERR), which CREC is currently preparing in order to meet the requirements of the Electricity Project Regulation (Ontario Regulation 116/01) under the Ontario *Environmental Assessment Act*.

This economic benefits assessment will focus on placing the Project in the context of the local economy and identifying contributions from both the construction and operations phases, such as:

- the income benefits, which trace the Project expenditures; and
- the employment benefits, which capture the job creation associated with the Project.

In addition, the study will address the impact of property tax, royalty, and other payments (i.e., under the Amenities Agreement) that the Project is expected to deliver to the affected communities and participating landowners.

The Project, if approved and developed, will produce social and environmental benefits in addition to the aforementioned economic benefits. Since those benefits are beyond the scope of this study, they will be mentioned only briefly herein.

The study was conducted in January 2007 by Nichols Applied Management, economic and management consultants. The firm has extensive experience in economic impact analysis, regional economics, and municipal finance.

1.3 LOCAL STUDY AREA

The local study area used in this assessment was chosen to capture those workers and businesses that are well located for ongoing involvement in the Project. The geographic criterion used is an expected commuting time to the Project of 45 minutes or less. Given the Project's location on Wolfe Island and the time required for the ferry crossing from Kingston, the 45 minute commuting time criteria is equal to an area of roughly 30 km around the Project site. Thus, the local study area encompasses Wolfe Island (including Simcoe Island) and the City of Kingston.

The local study area does not include U.S. communities, even though the Project site is in close proximity to the U.S. The emerging expertise in Ontario in wind plant construction and operation, the nature of cross-border activity, and the Canadian Hydro corporate strategy to utilize local labour, equipment, and materials, where they are available in significant quantity and quality and at competitive prices all suggest that the Project will not have a significant economic impact on U.S. communities.

Since the Project is located in the Township of Frontenac Islands and the County of Frontenac, special attention is paid to the impact of property tax benefits to the two municipal governments.

1.4 DATA SOURCES

This study presents estimates of the income, employment, and property tax benefits of the Project on the local economy, using the following data sources:

- operating and financial information obtained from Canadian Hydro;
- CREC Project documents including: Environmental Overview Report, Updated Project Description, and Baseline Environmental Report; and
- general industry and regional economic information from published sources, including Statistics Canada, the Government of Ontario, the County of Frontenac, and the Kingston Economic Development Corporation.

Although the assessment presented herein relies extensively on information provided by Canadian Hydro/CREC and other third parties, the findings are those of Nichols Applied Management.

2. SETTING AND PROJECT OVERVIEW

This section provides an overview of the Project and the local economy in which it is located.

2.1 WOLFE ISLAND

Population

Wolfe Island – the largest of the Thousand Islands in the St. Lawrence River – has a population of 1,142 residents.² The Island lies within the municipal boundaries of the Township of Frontenac Islands – the most southern township of the County of Frontenac.

Labour Force

The labour force of Wolfe Island, estimated at approximately 760 people in 2001, is primarily engaged in health, education and other government services; tourism; agriculture (e.g., beef and dairy farming); transportation services; and small boat manufacturing. The industries employing the largest portion of the labour force are as follows:

- health, education, and other government services (39%)³;
- manufacturing and construction (16%);
- agriculture and other resource-based industries (13%);
- wholesale and retail trade (13%); and
- business services (13%).⁴

The Ontario Ministry of Transportation (ferry service), the Township of Frontenac Islands, and Hulton's (school bus service) are among the largest employers on Wolfe Island. During the Project construction,

² Statistics Canada, Census 2001

³ Includes other services that are defined by the 1997 North American Industry Classification System ("NAICS") as personal and laundry, religious, grant-making, civic and professional and similar organizations, private households, and repair and maintenance.

⁴ Statistics Canada, Census 2001

Canadian Hydro will be the largest employer on the island. Upon completion of the Project construction, Canadian Hydro is likely to become one of the largest employers on the Island and in the Township of Frontenac Islands.

Family Income

The 2001 median family income of Wolfe Island is estimated at \$25,166. This is slightly lower than that of the Township of Frontenac Islands as a whole (\$27,048), but 1.4% higher than the median family income of Ontario (\$24,816).⁵

Linkage to Kingston

While many of the Island's residents work locally, a substantial number are employed by or provide services to businesses in Kingston. The City – located a short (20-minute) ferry ride from the Island – provides a number of public and private sector services to the Island's residents, including education, health, emergency, construction, repair and maintenance services.

2.2 KINGSTON

Population

The City of Kingston – the largest centre between Toronto and Ottawa – has a population of 114,195.⁶

Labour Force

Kingston's main industries include: government services, health and social services, and education, with occupational concentrations in management, social science, education, government services, and sales and service. The Canadian Forces, Queen's University, and Correctional Services of Canada are among the top ten public sector employers, which collectively employ about 40% of the total labour force of the City of Kingston.⁷ Other prominent sectors of the Kingston economy include traditional and emerging industries such as manufacturing, biotechnology, alternative energy, food processing, tourism, and business process outsourcing.

⁵ Statistics Canada, Census 2001

⁶ Statistics Canada, Census 2001

⁷ 2001 census, Statistics Canada and Community Profile, Kingston Economic Development Corporation, 2004

The following industries employ the largest portion of Kingston's labour force of 57,775 people:

- health, education, and other government services (54%);
- wholesale and retail trade (14%),
- business services (14%); and,
- manufacturing and construction (12%).⁸

Family Income

The median family income in Kingston (\$22,948) is about 8% lower than the median for Ontario (\$24,816)⁹ and 8.8% lower than the median for Wolfe Island.

Economic Diversification

One emerging target of economic diversification for Kingston and the islands – as the region is often referred to – is renewable and alternative energy, including wind energy.

The Kingston Economic Development Corporation supported the launch of SWITCH – a regional group comprised of alternative and renewable energy businesses, research institutions, community-minded volunteers, and public sector participants working together to position Kingston as a leading centre for alternative energy. Wolfe Island's geographic location – on the open shores of Lake Ontario – makes it an attractive location for wind energy facilities and the Wolfe Island Wind Project will be a major contribution, when developed, to this regional economic development initiative.

2.3 THE WOLFE ISLAND WIND PROJECT

The general features of the Wolfe Island Wind Project are summarized as follows:

⁸ Statistics Canada, Census 2001

⁹ Statistics Canada, Census 2001

- Nameplate capacity: 197.8 MW;
- Components:
 - 86, 2.3 MW wind turbine generators, each with a pad-mounted transformer;
 - access roads to the turbines;
 - an electrical collector and transmission system, including about four kilometres of underground transmission cable on the Kingston mainland, approximately 78 kilometres of electrical trenching on Wolfe Island, and about eight kilometres of submarine cable;
 - an electrical substation on Wolfe Island;
 - an operations and maintenance building on Wolfe Island; and
 - a switching station composed of circuit breakers and a direct line tap at the Hydro One's Gardiner Transformation Station in Kingston.
- Location:¹⁰
 - wind turbines, operations and maintenance building, transformer station, and most power lines and roads are located on Wolfe Island, Township of Frontenac Islands, County of Frontenac, Ontario;
 - power line and interconnection in City of Kingston; and
 - submarine cable located between Wolfe Island and the City of Kingston in the St. Lawrence River.
- Construction period: two years.
- Projected operational life: 30 years.

¹⁰ The length and location of the access roads, the collector lines and transmission lines will be determined based upon the final turbine locations, accessibility to adjacent sites, environmental features, and consultations with the affected landowner with a view to minimizing the effects on agricultural operations, resources, and practices. The route may include power lines within existing road allowances, on Correctional Services Canada lands, on the bottom of the St. Lawrence River, and on privately owned lands.

3. ECONOMIC BENEFITS

This section outlines the main economic benefits of the Wolfe Island Wind Project, namely:

- income benefits, which arise from the Project's expenditures (section 3.1);
- employment benefits, which capture the job creation associated with the Project (section 3.2); and
- municipal property tax, lease payments and other benefits, which capture the revenue flowing to the impacted communities and individual landowners (section 4).

The income and employment impacts associated with the Project will be presented for both the construction and operations phases. The municipal financial impacts pertain to the operations phase only.

The construction employment and income impacts have short-term effect on the study area for the duration of the pre-construction (i.e., project engineering, planning, and environmental screening) and construction activities, while the operational impacts occur over the Project life.

3.1 INCOME BENEFITS

3.1.1 Construction

The total capital cost of the Wolfe Island Wind Project is estimated at \$410 million. A high level breakdown of the total Project cost is as follows:

- approximately \$21 million for pre-construction activities, including engineering, planning, and environmental screening; and
- approximately \$389 million for construction activities, including labour, equipment, and materials.

Table 3-1 shows a breakdown of the construction capital cost by geography.

Table 3-1 Construction Expenditures by Area

	Local Area	Other Ontario	Outside Ontario	Total	Percent of Total
	thousands of dollars				
Labour	18,930	9,330	3,380	31,640	8%
Engineering Expenditures	4,810	8,350	7,930	21,090	5%
Turbines and Related Machinery	-	-	235,260	235,260	57%
Construction Materials and Equipment	<u>40,340</u>	<u>50,650</u>	<u>31,020</u>	<u>122,010</u>	<u>30%</u>
Total	64,080	68,320	277,600	410,000	100%
Percent of Total	16%	17%	68%	100%	

The local impact of the Project reflects the capital-intensive nature of the wind plant development. As Table 3-1 shows, approximately \$235 million – 57% of the total capital expenditure – is associated with the purchase of the Danish-built Siemens wind turbines and related major machinery. Other findings are:

- labour and engineering expenses account for about 13% of the total construction budget; and
- an estimated \$64 million or 16% of the total \$410 million in construction expenditures is anticipated to accrue to persons and businesses in the local study area.

The key construction-related activities likely accruing to the local area include:

- access road construction;
- gravel and sand supply;
- construction of concrete foundations for the wind towers;
- construction of concrete foundations for step-up transformers for individual wind turbines;
- land-based electrical installations;
- aspects of the Wolfe Island electrical substation construction;
- construction of the operations and maintenance building; and

- security and fencing.

The Project impact will extend beyond the local study area. Seventeen percent of the total construction expenditures are expected to relate to the use of labour, materials and equipment procured by Ontario contractors located outside the local study area (e.g., suppliers of cranes and excavation equipment). In addition, local area firms do purchase some inputs (e.g., materials and equipment) from outside of the area. Thus, some local area expenditures flow to suppliers outside the area.

3.1.2 Operations

Operating Costs

Table 3-2 presents a breakdown of the estimated operations expenditures by type and geographic area, excluding land lease payments to participating landowners and the Township of Frontenac Islands under the Amenities Agreement. The Table shows that operations expenditures associated with the Project are expected to total \$2.8 million annually. The Table also shows that \$1.2 million (or 44%) of the total expenditure is anticipated to accrue to the local area. These expenditures are subject to change as the Project gains operational experience.

Table 3-2 Estimated Direct Operations Expenditures by Area

	Local Area	Other Ontario	Outside Ontario	Total	Percent of Total
thousands of dollars					
Labour	1,040	240	90	1,370	49%
Turbine Replacement Parts			930	930	34%
Other Parts/Equipment	<u>190</u>	<u>240</u>	<u>40</u>	<u>470</u>	<u>17%</u>
Total	1,230	480	1,060	2,770	100%
Percent of Total	44%	17%	38%	100%	

Labour is the major operating cost category, accounting for about 49% of the total annual costs. Approximately 76% of the labour expenditures that accrue to the local area relate to the operations personnel of Canadian Hydro, discussed in more detail below. The balance (or 24%) pertains to the use of local labour by maintenance contractors.

Another major operational cost category is turbine replacement parts, mirroring the heavy weighting of turbines in the capital expenditure cost

composition. Turbine replacement parts are estimated to account for about 34% of the annual operating expenditures.

Agricultural Land Use

The majority of the land optioned by CREC for the construction of the wind plant is currently in agricultural use. However, the Project is not expected to have a material impact on the agricultural production of the area as its footprint is relatively small.

As shown in Table 3.3, the Project is expected to generate more income per acre for the individual farmer than keeping the land in crop or livestock production. By leasing out one acre of land for the operation of a wind turbine, the owner forgoes on average \$191 of agricultural income and gains an estimate of \$3,800 in lease income (see section 4.1 for estimated lease payments), with no capital investment – approximately 20-fold increase in income for that one acre of land.

Table 3-3 Income and Capital Investment per Acre of Land

	Agriculture	Wolfe Island Wind Project
	Dollars	
Landowner Annual Income/Acre	191	3,800
Landowner Capital Investment/Acre	1,571	
Canadian Hydro Capital Investment/Acre	–	1,907,000

Notes: \$3,800 assumes fixed lease payments (i.e., \$9,500 annual lease fee) and approximately 2.5 acres of land per turbine. (See section 4.1 for lease payment details.)

Sources: Ontario Ministry of Agriculture, Food and Rural Affairs, Gross Farm Revenue Class Eastern Ontario, 2004 and Canadian Hydro Developers, Inc.

The Table also shows that wind energy production is much more capital intensive than the agricultural activity it replaces. The capital investment is also very different indicating that wind energy production contributes to broadening and diversifying the landowner's revenue sources and the local economy.

3.2 EMPLOYMENT BENEFITS

3.2.1 Construction

Construction of the Project is expected to generate an estimated 464 person-years of employment. Table 3-4 presents the breakdown of this

employment by geographic area, showing the number of person-years accruing to each area.

Table 3-4 Estimated Construction Employment by Area

	Local	Other Ontario	Outside Ontario	Total	Percent of Total
	(in person-years)				
Construction Labour	237	117	42	395	28%
Engineering Labour	<u>16</u>	<u>27</u>	<u>26</u>	<u>68</u>	<u>72%</u>
Total	252	144	68	464	100%
Percent of Total	54%	31%	15%	100%	

The Table shows that 252 person-years of the employment associated with the Project's construction activities or 54% of the total employment is expected to accrue to the local area. This employment will be mostly associated with companies located in the local study area, but will also include employment created by other Ontario, Canadian, or international contractors that draw upon the local labour force.

Similar to the construction expenditures outlined in Section 3.1.1, most of the local area employment will likely relate to the following construction activities:

- access road construction;
- gravel and sand supply;
- concrete foundation construction;
- construction for step-up transformers;
- land-based electrical installations;
- aspects of the Wolfe Island electrical substation construction;
- construction of the operations and maintenance building; and
- security and fencing.

In addition to the direct employment estimates shown in Table 3-4, there is employment associated with the manufacturing of the materials and equipment purchased by the Project. This labour component of

purchased equipment is not estimated here, but is expected to accrue mostly to workers outside the local study area. Indeed, about two-thirds of the materials and equipment are expected to be procured internationally.

3.2.2 Operations

Once operational, the Project will be among the largest employers on the Island and in the Township of Frontenac Islands. The Project is expected to generate:

- year-round employment for ten workers, including technicians (e.g., electricians or millwrights) and managers (28% of direct operations employment); and
- periodic maintenance and capital replacement employment, estimated at 26.4 person-years or 72% of total operational employment.

Table 3-5 shows the breakdown of the direct operations employment by type. The Table indicates that the Project is expected to provide direct employment for eight people with technical skills and two people with administrative and management skills.

Table 3-5 Direct Operations Employment by Type

Positions	Number of Positions
Plant Manager	1
Technicians	8
Office Manager	1
Total	10

In addition to the permanent positions shown in Table 3-5, the Project is expected to create new positions in Canadian Hydro's headquarters in Calgary, Alberta and regional offices in Guelph and Kingston, Ontario.

Table 3-6 presents a breakdown of operations employment in annual person-years according to type and geographic area. The Table shows that all of the facility's direct operations employees are expected to be recruited from or live in the local study area. Part of the ongoing employment among providers of maintenance and capital replacement services is anticipated to accrue to local area contractors. As shown in Table 3-6, approximately 80% of the total operations employment is likely to accrue to local area workers.

Table 3-6 Operations Employment by Area

	Local Area	Other Ontario	Outside Ontario	Total	Percent of Total
	(in person-years)				
Operations	10.0			10.0	50%
Maintenance	<u>5.9</u>	<u>2.9</u>	<u>1.0</u>	<u>9.8</u>	<u>50%</u>
Total	15.9	2.9	1.0	19.8	100%
Percent of Total	80%	15%	5%	100%	

Note The Table assumes the Wolfe Island Wind Project's operations expenditures will be similar to those of Canadian Hydro's existing Melancthon I Wind Plant.

4. FINANCIAL BENEFITS

4.1 LEASE PAYMENTS

In addition to the operations expenditures shown in Table 3-2, the Project will generate income for local landowners through land lease payments. The Project is estimated to pay the following:

- \$12,000 in fixed leases for land used for access roads, the transformer station, and the operations and maintenance building; and
- \$1.2 million in royalty-based leases for lands used for wind turbines.

Royalty-based leases link lease payments to the amount of power generated by the individual turbine and allow the landowner to share in the upside of high levels of energy production. However, as an alternate payment strategy, landowners can elect to receive fixed lease fees per turbine. The fixed lease fee per turbine is set at \$9,500 per year, while the royalty-based lease payments could be approximately \$13,500 per year, assuming that the turbine achieves its target capacity factor of approximately 30%.

Based on preliminary estimates prepared by CREC, total land lease royalty payments for the first fifteen years of the Project operations amount to:

- \$823,000 per year, assuming all landowners select fixed lease payment terms; or
- Approximately \$1.2 million per year, assuming all landowners select the variable lease payments option and the capacity factor of 30% is achieved.

Each year the royalty payments will be adjusted for a portion of inflation and after the first 15 years of operation, lease royalty rates will increase.

4.2 AMENITY FEE

Canadian Hydro/CREC has committed to pay an amenity fee to the Township of Frontenac Islands over and above lease payments to individual landowners and property taxes, ensuring that the benefits of the Project extend over the whole community.

The amenity fee will further extend the financial benefits of the Project to all residents of the Township of Frontenac Islands. The payments, as specified under the Amenities Agreement, will equal the greater of:

- 1.25% of the gross annual revenue; or
- \$7,500 per turbine (based upon the 86 turbines this will equal to \$645,000 annually).

The amenity fee of \$645,000 represents approximately 74% of Wolfe Island and 54% of total Township tax revenues for 2006, and is expected to be at least six times higher than the Project's estimated property taxes to be paid to the Township of Frontenac Islands (see below). Given the small impact of the Project on municipal infrastructure, the amenity fee is in effect new net revenue for the Township in excess of \$390 per resident. According to the terms of the agreement, the amenity fee rate will increase after the first 20 years of operations.

4.3 PROPERTY TAXES

The assessment of the Project for property tax purposes is determined according to the formula established by the Province of Ontario's Municipal Property Assessment Corporation ("MPAC"). Wind tower assessment is calculated according to the following formula:

$$\begin{aligned} \text{Assessment} = & \$40,000 \times \text{Installed Capacity in Megawatts} \\ & \text{plus} \\ & \text{Number of Turbines} \times \text{Cost of One Acre of Land} \end{aligned}$$

The property taxes payable are calculated on the basis of the prevailing industrial property tax rates in the affected municipalities. Assuming current rates, the Project is estimated to pay approximately \$162,100 annually in property taxes to Township of Frontenac Islands and County of Frontenac. This estimate does not include payments for the submarine transmission cable, which is expected to be exempt from taxation.

Table 4-1 presents a breakdown of the projected property taxes to Township of Frontenac Islands and County of Frontenac.

Table 4-1 Wolfe Island Wind Project Property Taxes

	Project Features					
	Turbines	Electrical Substation	Roads & Miscellaneous	Buildings	Total	Percent of Total
	Dollars					
Township of Frontenac Islands	48,300	6,100	52,800	3,700	110,900	68%
County of Frontenac	22,300	2,800	24,400	1,700	51,200	32%
Total	\$70,600	\$8,900	\$77,200	\$5,400	\$162,100	100%

Table 4-1 shows that an estimated \$110,900 (or 68%) of property taxes will accrue directly to the Township of Frontenac Islands, the location of the Project facilities. This will represent an increase of approximately 220 percent in the Wolfe Island Ward 2006 tax revenue from non-residential properties.

As discussed above, the Township will also receive an amenity fee from the Project. Taken together, the property taxes and amenities fee will increase the Township's fiscal revenues by \$755,830 per year, or more than \$460 per resident. The figure represents about 84% of the 2006 tax revenues of the Wolfe Island Ward.

An additional \$51,200 (or 32%) of the estimated property taxes will accrue to the County of Frontenac. Although the Township is not a direct recipient of this tax revenue, the residents of Wolfe Island will benefit from the services provided by the County to the Township of Frontenac Islands (i.e., long-term care, land ambulance and emergency services, economic development, and social services).

For all recipients, the revenue from property taxes and amenity fees is essentially net new revenue, noting that the Project:

- has a small footprint and thus a very small impact on the agricultural assessment base; and
- does not generate notable demand for municipal or education services.

In this context the Project is much more efficient than, for example, new houses. Not only would it require several hundred houses to have similar municipal revenues, these houses would imply service costs and thus have municipal expenditure implications.

Finally, the Project will pay an estimated \$390,000 in education taxes benefiting Ontario school boards.

5. OTHER BENEFITS

Indirect and Induced Economic Benefits

The quantifiable direct economic and fiscal benefits of the Wolfe Island Wind Project, including its contributions to business income, employment, lease payments and property taxes in the Township of Frontenac Islands, Frontenac County, and the Ontario education system have been discussed above. However, the economic stimulus of the Project will yield further indirect and induced impacts. For example,

- the project's local concrete contractor buys fuel from his supplier (indirect impact), and
- people employed by both the Project and the contractors spend part of their wages on food, recreation, and other goods and services (induced impacts) in the general economy.

Taken together, these indirect and induced impacts are referred to as the multiplier effect. Studies¹¹ have shown that indirect and induced employment effects range between 0.6 and 0.26 jobs per megawatt of capacity, suggesting that the Project will create between 50 and 120 new jobs.

The Project will also generate a number of additional economic benefits that are listed here, but are not further quantified:

- More reliable energy delivery for consumers and reduced use of fossil fuels as a source of electricity generation, which reduces greenhouse gas emissions and our impact on the environment.

¹¹ Grover, Dr. Stephen, etc.. Economic Impacts of Wind Power in Kittitas County. ECONorthwest, Phoenix Economic Development Group, November 2002. Jain, Regina and Winer, Jonathan H. A Brief Overview of U.S. Studies on the Local Economic Development Impacts of Wind Energy. La Capra Associates, November 2005. Hoffer, Doug. *The Economic Benefits of Wind Farm Development in Vermont*. Renewable Energy Vermont, October 2002. Algosio, Dave and Rusch, Emily. *Renewables Work Job Growth from Renewable Energy Development in the Mid-Atlantic*. New Jersey Public Interest Research Group (NJPIRG), Law and Policy Center, Spring 2004.

- Opportunities to establish the region as a centre for wind energy, including the development of a cluster of businesses with specialist skills and expertise in building and maintaining wind towers and associated facilities.
- Electricity provided by the Project is under long-term fixed price contract with the Ontario Power Authority and thus assists in stabilizing energy prices in Ontario.
- The benefits of having a growing company such as Canadian Hydro/CREC as a local corporate citizen. An example of this benefit is the company's support for the Energy House of St. Lawrence College – Kingston Campus, which showcases alternative energy technology. In addition, Canadian Hydro has provided support for a number of local community events, such as the Wolfe Island Music Fest, Art in the Garden Wolfe Island Festival, and others.

Ontario Government Policy Objectives

The Wolfe Island Wind Project supports the Government of Ontario's policy objectives to increase Ontario's electricity supply and to actively promote renewable energy generation. The strategy is part of the push to bring electricity production from renewable sources from the approximately 23% of 2005 electricity production to a target of 43% by 2025.¹² The Wolfe Island Wind Project will have the largest installed capacity in Ontario and Canada and will increase the current total Ontario wind power capacity by more than 30%.¹³

¹² Ontario Power Authority, *Supply Mix Advice Report*, 2005

¹³ Canadian Wind Energy Association, *Canada's Current Installed Capacity*, 11/2006

6. SUMMARY CONCLUSIONS

The Wolfe Island Wind Project provides positive income, employment, and fiscal benefits to the local area, including the Township of Frontenac Islands, the City of Kingston, and the County of Frontenac.

As detailed in this assessment, construction of the Project is expected to provide \$64 million in income and 252 person-years of employment to local area workers and contractors.

Project operations are expected to provide an estimated \$1.2 million annually in income and 16 person-years of employment to local area workers and businesses. These operating impacts will accrue annually to the local area for the life of the Project.

The Project also contributes positively to the financial situation of the Township of Frontenac Islands and the County of Frontenac. These jurisdictions receive ongoing property tax income from the Project, estimated at approximately \$162,000 per year, without incurring substantive new operating expenditures.

In addition, in recognition of the community, the Project will be contributing a minimum of \$7,500 per turbine for a total of \$645,000 annually in amenities fees to the Township of Frontenac Islands. The combined fiscal impact on the Township of the estimated property taxes and amenity fees is expected to exceed \$755,830 and represents 64% of the Township's 2006 tax revenues.

The Project also contributes positively to the income diversity of the landowners on which the wind turbines and ancillary facilities are placed. Landowners who opt for fixed lease payments are expected to receive approximately \$9,500 per wind tower for the use of approximately one to two acres of land. Landowners who choose the variable lease option will receive payments commensurate with the annual turbine power generation which are expected to be in the range of \$13,500. Compared to agricultural production, these royalty payments constitute a substantial increase in the return to the owner, noting that net returns to agriculture per acre are negative for small farms and very modest for medium and even some larger farms.

Finally, the Project represents a positive contribution to the Ontario government's policy goal of expanding renewable power generating capacity.

APPENDIX A
BIBLIOGRAPHY

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